



**MINNESOTA DEPARTMENT OF PUBLIC SAFETY  
State Fire Marshal Division**

**STATEMENT OF POLICY**

Policy #: INS-07 (2007)	Subject of Policy: Fire Department Water Supplies		
Reviewed and Approved By: Jerry Rosendahl	Title: State Fire Marshal	Effective Date: 11/1/1999	Revised Date: July 10, 2007

**APPLIES TO:**

All Inspection Personnel, Inspection Supervisors, Code/Plans Specialists.

**PURPOSE:**

To provide guidance and uniformity in the application of the requirements for firefighting water supplies. This policy applies to new construction (new buildings, additions to existing buildings, and buildings moved onto a new site).

**POLICY:**

**SECTION 1 — FIRE DEPARTMENT WATER SUPPLIES**

**1.1 When required**

2007 Minnesota State Fire Code [here after referred to as MSFC (07).] Section 508 requires approved water supplies for firefighting purposes is provided for new buildings and structures, additions to buildings, and buildings moved onto a new site. These provisions apply when any portion of a building is more than 150 feet from a water supply on a public street. In rural areas, this should be measured as 150 feet from the point of fire apparatus access where water transfer operations will take place.

The requirement for fire department water supplies as covered in this policy will apply to all buildings and additions constructed on or after July 10, 2007.

**1.2 Acceptable water supplies**

The State Fire Marshal will accept the following as approved water supplies:

- Municipal water supplies connected to hydrants,
- Private water supplies connected to hydrants,
- Private water supplies stored in reservoirs and/or tanks,
- Water supplies from natural sources (ponds, lakes and rivers),
- Water transfer operations (i.e. "tankering) provided by fire departments.

When evaluating a fixed water supply, flow test data no older than 3 years should be reviewed. For water supplies based on fire department operations such as tankering, the local fire chief shall be consulted to determine the capabilities in terms of available water flow.

### **1.3 Establishing the Needed Fire Flow (NFF)**

The needed fire flow for a building depends on a number of factors:

- Fixed fire protection (fire sprinklers)
- Construction type
- Height and area
- Compartmentation
- Occupancy and quantity of storage
- Fire department response time and capabilities

When evaluating a water supply to provide the needed fire flow (NFF), the time necessary to establish the water supply must be considered. The flow rate of water in gallons per minute (gpm) must be available early in the fire fighting efforts (i.e. during initial fire attack). As a guide, 10-20 minutes should be the maximum time to establish the available water supply.

#### **1.3.1 Developed areas with a municipal water supply**

The water supply must be capable of providing the NFF.

For buildings that are protected throughout by an automatic sprinkler system, fire department water supplies in terms of the NFF may be reduced by up to 75 percent to a minimum of 250-500 gpm. The code official is authorized to reduce the fire-flow requirements for isolated buildings or a group of buildings in rural areas or small communities where the development of full fire flow requirements is impractical.

On the other hand, the code official is authorized to increase the fire flow requirements where conditions indicate an unusual susceptibility to group fires or conflagrations. An increase shall not be more than twice that required for the building under consideration.

#### **1.3.2 Rural areas with no municipal water supply**

It must be recognized that water supplies common in developed areas with municipal systems are typically not available in rural areas..

Table 1 below provides guidance on the minimum acceptable water supply that must be available for fire department use. At any one building, the quantities given in Table 1 may come from a number of sources. For example:

- A weak municipal system able to supply the required water for sprinklers, with additional water for hose streams equal to the NFF provided from tankers or a fixed source such as a reservoir, lake or pond.
- No municipal water supply available in the area. Sprinklers, if provided, are supplied from a tank or underground reservoir. The fire department is able to provide the NFF for hose streams through tankering.
- No municipal water supply available in the area. Sprinklers, if provided, are supplied from a tank or underground reservoir. The fire department is unable to provide the entire NFF for hose streams through tankering. Additional water is made available from a fixed source at the site.

- No municipal water supply available in the area. Sprinklers, if provided, are supplied from a tank or underground reservoir. The fire department is unable to provide the entire NFF for hose streams through tankering within 10-20 minutes. Additional water must then be available from a fixed source at the site to provide water until the fire flow through tankering is established.

When firefighting water supplies are provided from natural sources and water transfer operations, Deputy State Fire Marshals should request documentation from the local fire official that they are capable of supplying the NFF. If the local fire department is not capable of providing the NFF, additional on-site water supplies shall be provided.

#### **1.4 Sprinklers versus NFF**

The State Fire Marshal Division encourages the installation of fire sprinklers whenever possible as outlined in the SFMD Policy INS-04 titled, *Automatic Sprinklers*. In some cases, automatic sprinklers are not installed because insufficient water is available to supply both the sprinklers and fire department operations. Such a situation is not in the best interest of all involved since sprinklered buildings historically do not require large quantities of water for fire department operations.

To support the installation of sprinkler systems with weak water supplies, additional modification of the NFF or hose stream requirements should be considered. See the SFMD Policy FP-02 titled, *Water Supplies for Fire Protection Systems*.

#### **1.5 NFF for areas with no organized fire department**

In areas with no organized fire department, there is no NFF for buildings where no fire department response is anticipated. Above ground storage tanks in areas with no organized fire department are not to be installed according to NFPA 30 Table 2-1 for protected exposures.

#### **1.6 Exempt buildings**

The NFF values specified above need not be provided for the following buildings:

- Agricultural buildings such as barns, sheds, storage buildings, silos etc.
- One and two family residential buildings

Typically fires in agricultural buildings lead to total losses before the fire department arrives. Fires in most one and two family residential buildings are well within the fire fighting capabilities of most fire departments based on the quantity of water carried in tanks on responding fire apparatus.

**Table 1: Needed Fire Flows (NFF) In Areas Not Served by a Municipal Water Supply**

<b>OCCUPANCY GROUP [NOTE 1]</b>	<b>SPRINKLERED BUILDING (NFPA 13 SYSTEM) [NOTE 2]</b>	<b>UNSPRINKLERED OR PARTIALLY (NFPA 13R OR NFPA 13D) SPRINKLERED BUILDING</b>	<b>WATER SUPPLY DURATION (MINUTES)</b>
Light Hazard	100 gpm available for fire department use	250 gpm available for fire department use	30
Ordinary Hazard	250 gpm available for fire department use	500 gpm available for fire department use	60
Extra Hazard	500 gpm available for fire department use	750 gpm available for fire department use	90
High Piled Combustible Storage	Hose stream demand from sprinkler installation standard (NFPA 13) or 500 gpm, whichever is larger.	1000 gpm available for fire department use	120
Other Group H Occupancies	Hose stream demand from sprinkler installation standard (NFPA 13, MSFC Chapter 34, etc.), or 500 gpm, whichever is larger.	1000 gpm available for fire department use	120
Above Ground Storage Tanks Installed According to NFPA 30 Table 2-1 and requiring protection for exposures.	Not Applicable	750 gpm available for fire department use	120

[**Note 1:** Light, ordinary and extra hazard are as defined in the 2002 edition of NFPA 13, Standard for the Installation of Automatic Sprinkler Systems.

[**Note 2:** In sprinklered buildings, when a fixed water supply is used for the sprinklers, the hose stream available for fire department need not come from the fixed source (i.e. tank).]

**RATIONALE:**

Providing the necessary water supply for firefighting purposes does not belong solely to the municipality or the fire department; the property owner or developer has some responsibility also. Simply because there is no municipal water supply does not mean that there is no need for a firefighting water source; fires can and do happen in rural areas as well as municipal settings.

The MSFC requires on-site hydrants where buildings or portions are more than 300 feet from a water supply on a public street [MSFC (07) Section 508.5.1].

For buildings that are completely sprinklered, the required fire department water supply can be reduced quite significantly. Deputy State Fire Marshals are reminded to encourage the installation of fire sprinklers as a trade-off according to SFMD policy INS-04 titled, *Automatic Fire Sprinkler Systems*. The reduced fire department water supply may also allow a wider spacing of fire hydrants as another economic savings to encourage sprinkler protection.

For sprinklered buildings, the NFF values given in Table 1 are based on the hose stream demand specified by the appropriate sprinkler installation standard. For unsprinklered or partially sprinklered buildings, the NFF values were selected to be approximately twice the NFF for a sprinklered building.

Because of potential hardship situations resulting from requirements for NFF, this policy is intended to apply only to buildings constructed on or after July 10, 2007. It is not intended that this policy apply to buildings constructed before July 10, 2007 even though requirements for fire department water supplies have appeared in the previous MUFC since October 3, 1975 and water supplies for these buildings can be discussed with a supervisor or bureau chief.